Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1 - 4 (Canceled)

5. (Currently Amended) A monitoring apparatus for monitoring polarization-mode dispersion and chromatic dispersion of optical signals in wavelength division multiplexing (WDM) optical networks, the monitoring apparatus comprising:

an optical distributor for distributing optical signals;

a first light receiver for photoelectrically converting the optical signals to measure a frequency band of the optical signals distributed by said optical distributor;

a second light receiver for photoelectrically converting the optical signals to measure an average power of the optical signals distributed by said optical distributor;

a filter for passing output signals of said first light receiver over the frequency band of interest for measuring;

a power meter for measuring signal power over the frequency band filtered by said filter;

an analog-to-digital (A/D) converter for converting analog signals from said first and second receivers into digital signals; and

a microprocessor for measuring average power of the optical signals by using the digital signals from said A/D converter and monitoring polarization-mode dispersion and chromatic dispersion using power values measured by said power meter;

~~A monitoring apparatus of claim 4,~~ wherein said power meter produces ~~the~~ a maximum power value ($P(f)_{max}$) and ~~the~~ a minimum power value ($P(f)_{min}$) of the ~~output~~ signals outputted from said first light receiver according to ~~the~~ a polarization scrambling technique, ~~and~~ said maximum and minimum power values being defined as: ~~are expressed as follows~~[[.]]

$$P(f)_{max} \propto \cos(\pi cDL(f/f_0)^2)$$

$$P(f)_{min} \propto [\cos^2(\pi f \Delta \tau)][\cos \pi cDL(f/f_0)^2)]$$

where c indicates ~~the~~ a speed of light, D indicates a chromatic dispersion coefficient of an optical fiber in ps/km/nm, L indicates a length of the optical fiber, f indicates a frequency, and f_0 indicates an optical frequency of optical signals~~, respectively~~.

6. (Currently Amended) [[A]] The monitoring apparatus of claim 5, wherein said microprocessor monitors the polarization-mode dispersion by ~~the~~ a ratio of the maximum power value ($P(f)_{max}$) and the minimum power value ($P(f)_{min}$), which are measured by said power meter, and monitors ~~the~~ chromatic dispersion by the

maximum power value, ~~and~~ said polarization-mode dispersion ($\Delta\tau$) and said chromatic dispersion (DL) being defined as: ~~are expressed as follows.~~

$$\Delta\tau = \cos^{-1}(2\,P(f)_{min}/P(f)_{max}-1)/(2\pi f)$$

$$DL \propto P(f)_{max}$$

~~, where D indicates chromatic dispersion coefficient of optical fiber in ps/km/nm, L indicates length of optical fiber, and f indicates frequency, respectively~~.

7. (Currently Amended) [[A]] The monitoring apparatus of claim 5 [[4]], wherein said optical distributor is an optical coupler that extracts optical signals received at a constant rate.

8. (Currently Amended) [[A]] The monitoring apparatus of claim 5 [[4]], wherein said filter has ~~the~~ a center frequency falling within the frequency band of ~~the~~ data signals when ~~only~~ the data signals are applied to the received optical signals.

9. (Currently Amended) [[A]] The monitoring apparatus of claim 5 [[4]], wherein ~~the~~ a center frequency of said filter corresponds to ~~the~~ a frequency of ~~the~~ a high-frequency pilot tone when ~~both the~~ data signals and ~~the~~ extra pilot tone signals are applied to the received optical signals.

10. (New) The monitoring apparatus according to claim 5, wherein said optical signals are modulated by a polarization scrambler to have a polarization state in every direction.

11. (New) The monitoring apparatus according to claim 5, wherein the filter passes only over the frequency band of interest for measuring.

12. (New) A monitoring apparatus for monitoring polarization-mode dispersion and chromatic dispersion of optical signals in wavelength division multiplexing (WDM) optical networks, the monitoring apparatus comprising:

an optical distributor for distributing optical signals;

a first light receiver for photoelectrically converting the optical signals to measure a frequency band of the optical signals distributed by said optical distributor;

a second light receiver for photoelectrically converting the optical signals to measure an average power of the optical signals distributed by said optical distributor;

a filter for passing output signals of said first light receiver over the frequency band of interest for measuring;

a power meter for measuring signal power over the frequency band filtered by said filter;

an analog-to-digital (A/D) converter for converting analog signals from said first and second receivers into digital signals; and

a microprocessor for measuring average power of the optical signals by using the digital signals from said A/D converter and monitoring polarization-mode dispersion and chromatic dispersion using power values measured by said power meter;

wherein said filter has a center frequency falling within the frequency band of data signals when the data signals are applied to the received optical signals.

13. (New) The monitoring apparatus according to claim 12, wherein said optical signals are modulated by a polarization scrambler to have a polarization state in every direction.

14. (New) The monitoring apparatus of claim 12, wherein said optical distributor is an optical coupler that extracts optical signals received at a constant rate.

15. (New) The monitoring apparatus according to claim 12, wherein the filter passes only over the frequency band of interest for measuring.

16. (New) A monitoring apparatus for monitoring polarization-mode dispersion and chromatic dispersion of optical signals in wavelength division multiplexing (WDM) optical networks, the monitoring apparatus comprising:

an optical distributor for distributing optical signals;

a first light receiver for photoelectrically converting the optical signals to measure a frequency band of the optical signals distributed by said optical distributor;

a second light receiver for photoelectrically converting the optical signals to measure an average power of the optical signals distributed by said optical distributor;

a filter for passing output signals of said first light receiver over the frequency band of interest for measuring;

a power meter for measuring signal power over the frequency band filtered by said filter;

an analog-to-digital (A/D) converter for converting analog signals from said first and second receivers into digital signals; and

a microprocessor for measuring average power of the optical signals by using the digital signals from said A/D converter and monitoring polarization-mode dispersion and chromatic dispersion using power values measured by said power meter;

wherein a center frequency of said filter corresponds to a frequency of a high-frequency pilot tone when data signals and extra pilot tone signals are applied to the received optical signals.

17. (New) The monitoring apparatus according to claim 16, wherein said optical signals are modulated by a polarization scrambler to have a polarization state in every direction.

18. (New) The monitoring apparatus of claim 16, wherein said optical distributor is an optical coupler that extracts optical signals received at a constant rate.

19. (New) The monitoring apparatus according to claim 16, wherein the filter passes only over the frequency band of interest for measuring.